The optimal price

Tool facilitates international price management

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How does pricing work in an international context? The tool AlsCaCEO is supposed to determine transnational profit-oriented price corridors on an empirical basis. Based on a current case, Joachim Scholz-Ligma and Andreas Jütting explain how the tool works exactly.

In today's interconnected market, products aren't just facing the competition of their traditional rivals; the products themselves are their very own competition if offered at a better price in a different country. Trade barriers do still exist in the respective countries. Ever since the introduction of the Euro however, they are actually only made up of higher costs due to longer hauls, predominantly.

For pricing within an international context, managers have the choice between these two basic approaches:

a) Isolated pricing for individual countries

This means setting the (locally) optimal price for each segment and leaving it simply to the effects of the forces of the free market. Differences between the countries are ignored here, and every country is able to set its own price, decentralised and isolated from the others. This strategy promotes parallel imports. While turnover increases in low-price countries, it actually slumps in the top-price countries.

b) One-price strategy

This means ignoring the respective willingness to pay and setting the same price for every market. However, in countries with low willingness to pay, this leads to turnovers taking a tumble since the price is significantly higher than the optimal price respectively. At the same time, profits cannot be maximised in the countries with a high willingness to pay since the products are sold too cheap there.

Need for a new solution

None of the two pricing strategies really get anyone closer to maximum profits. Furthermore they cause dissatisfaction in the local markets. Therefore another optimisation approach is needed, which should take into account the situations in the

different countries as well as the business goals of the whole enterprise. This type of optimisation basically requires knowledge of the following characteristic values for each market:

- the willingness to pay for the respective products,

- the competing products and their actual market prices,

- the dealer's margins,

- the size of the national markets,

- and the arbitrage between the markets.

Fig. 1   Source: Produkt + Markt
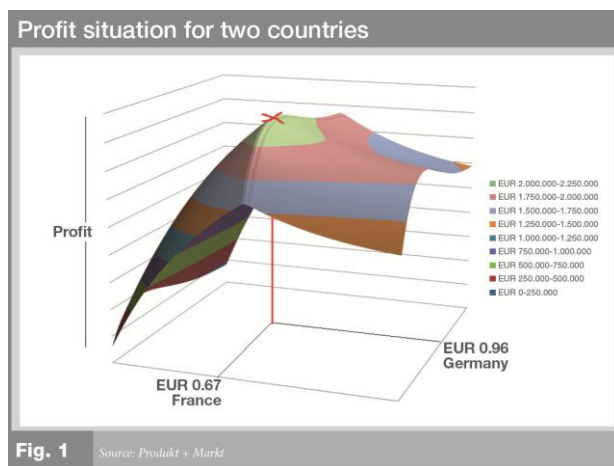
Let us take a look at the case where the price of a product is to be optimised in the following seven countries: Germany, France, Italy, Spain, Poland, Belgium, and the Netherlands. The initial determination of the profit optimum for two countries respectively is quite simple: One calculates the profit for all possible price combinations before determining the maximum. The result is a solid graph depicting the profits and allows one to clearly read the maximum. Fig 1 shows a respective graph for the countries of Germany and France. The red cross marks the maximum profit (0.96 Euro/0.67 Euro).

Especially developed search algorithm

However, to optimise the profits of the seven countries, it does not suffice to just look at two countries each. It is necessary to simultaneously change the prices for all countries. The complexity of the calculation increases exponentially with the number of countries. While only 10,000 price combinations are needed to graph the profit (which takes the tool AlasCaCEO less than one second), the same strategy for seven countries would require calculating 100 trillion price combinations. This would take years using customary PCs. Therefore AlasCaCEO uses an especially developed, innovative search algorithm when there are more than four countries involved. Even for highly complex inquiries, the algorithm is able to determine the maximum profit within a matter of minutes. At first, a realistic price combination is determined as a starting point. Then this price combination is altered and the profit maximum determined. When the profit increases, this price combination becomes the basis for a new search. Subsequently, the range of a potentially better price is determined by using the Newton-Raphson method.

By systematically varying the starting points, it is possible to increase the profit step by step. The optimisation process already obtains promising solutions after just a few iterative steps. In addition to common settings like dealer margins, exchange rates, variable average costs and overheads, it is also possible to set a price corridor where the prices of the countries are allowed to be.

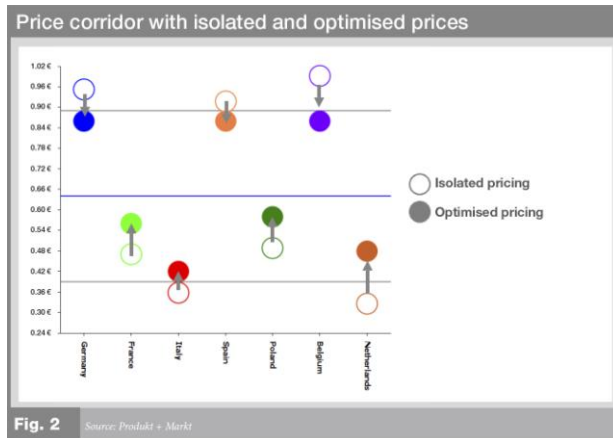A central result is shown in fig. 2.

Fig. 2   Source: Produkt + Markt

The graph depicts the optimised solution (solid symbols) and at the same time, the prices of the isolated pricing (empty symbols) at a set price corridor of 0.50 Euro max. The arrows point into the direction of price changes.

Some of the prices from the isolated pricing lie outside of the defined price corridor. The tool finds a solution with a profit that is 7.4 percent higher, while all the prices from the optimal solution also fall within the set price corridor.

As a multilateral conjoint tool, AlasCaCEO provides the opportunity to analyse different price combinations. The consequences of price changes in the individual countries are directly determined using IF-THEN scenarios. Especially this property provided us with very positive experiences in international pricing workshops.

The Authors

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